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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/757,990	01/10/2001	Alexander Vaisburd	037/01748	8519

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EXAMINER	
TABATABAI, ABOLFAZL	

ART UNIT	PAPER NUMBER
2625	

DATE MAILED: 02/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/757,990	VAISBURD ET AL.	
	Examiner	Art Unit	
	Abolfazl Tabatabai	2625	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *August 4, 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-28* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *26* is/are allowed.

6)☒ Claim(s) *1-3,6-24,27 and 28* is/are rejected.

7)☒ Claim(s) *4,5,9 and 25* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *10 January 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Response to Amendment/Arguments

1. Applicant's arguments, (pages 1-6), filed on October 4 2004, with respect to the rejection(s)of claim(s) 1-3,6-24,27 and 28 under Ozaki (U S 5,995,581) and Hardy et al (U S 6,011,828) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Wischmann et al (U S 5,872,829) and Wollenweber (U S 2002/0081008).

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 1-3, 6, 8, 10 and 14-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wischmann et al (U S 5,872,829) in view of Wollenweber (U S 2002/0081008).

Regarding claim 1, Wischmann discloses a method for the determination of variable sag of a supporting element of a support system supporting a subject, comprising:

(a) acquiring an image of a slice of the subject at an imaging position (see abstract and column 4, lines 32-37).

However, Wischmann is silent about specific details regarding the step of:

(b) determining said sag of said support element at said imaging position.

In the same field of endeavor (computed tomography), however, Wollenweber discloses imaging table sag measurement and compensation method and system comprising:

(b) determining said sag of said support element at said imaging position (see abstract and page 2, column 1, lines 1-11 of paragraph 3).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use the step of determining said sag of said support element at said imaging position as taught by Wollenweber in the system of Wischmann because Wollenweber provides Wischmann an improved advanced system which is useful for compensating for misalignment of two or more image data sets due to support table deflection. The compensator 40 illustrated in FIG.2 can be used to either modify one or both sets of raw acquired data. In the alternative, the compensator 40 can modify final computerized tomography and

positron emission tomography images prior to generating a unified image although such compensation may be less accurate than compensation involving raw data.

Regarding claim 2, Wischmann is silent about specific details regarding the step of adjusting said image to compensate for said determined sag.
In the same field of endeavor (computed tomography), however, Wollenweber discloses imaging table sag measurement and compensation method and system comprising the step of:
adjusting said image to compensate for said determined sag (see page 1, column 1, lines 2-9 of paragraph 4 and page 1, column 2, lines 10-12 of paragraph 1).
It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use adjusting the images as taught by Wollenweber in the system of Wischmann because Wollenweber provides Wischmann an improved advanced system which is useful for compensating for misalignment of two or more image data sets due to support table deflection. The compensator 40 illustrated in FIG.2 can be used to either modify one or both sets of raw acquired data. In the alternative, the compensator 40 can modify final computerized tomography and positron emission tomography images prior to generating a unified image although such compensation may be less accurate than compensation involving raw data.

Regarding claim 3, Wischmann is silent about specific details regarding the step of acquired image is used for determining said sag.

In the same field of endeavor (computed tomography), however, Wollenweber discloses imaging table sag measurement and compensation method and system comprising the step of:

acquired image is used for determining said sag (see abstract and page 2, column 1, lines 1-11 of paragraph 3).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use acquired image for determining said sag as taught by Wollenweber in the system of Wischmann because Wollenweber provides Wischmann an improved advanced system which is useful for compensating for misalignment of two or more image data sets due to support table deflection. The compensator 40 illustrated in FIG.2 can be used to either modify one or both sets of raw acquired data. In the alternative, the compensator 40 can modify final computerized tomography and positron emission tomography images prior to generating a unified image although such compensation may be less accurate than compensation involving raw data.

Regarding claim 6, Wischmann discloses a method as in claim 2 in which said acquired image is a CT image (column 5, lines 28-36).

Claim 8, is similarly analyzed as claim 1 above.

Claim 10, is similarly analyzed as claim 2 above.

Regarding claim 12, Wischmann discloses a method for the correction of the effects of different sags of a supporting element on more than one image of one slice of a subject, comprising:

(a) acquiring at least one image of said slice at an imaging position (see

column 4, lines 32-37, column 5, lines 28-37 and column 6, lines 11-17);

(b) acquiring another image of said slice at a different imaging position (see column 4, lines 32-37, column 5, lines 28-37 and column 6, lines 11-17). However, Wischmann is silent about specific details regarding the steps of:

(c) determining said sag of said support element at said imaging position.

(d) aligning said acquired images based on the determined sag.

In the same field of endeavor (computed tomography), however, Wollenweber discloses imaging table sag measurement and compensation method and system comprising the steps of:

(c) determining said sag of said support element at said imaging position(see abstract and page 2, column 1, lines 1-11 of paragraph 3).

(d) aligning said acquired images based on the determined sag (see page 1, column 1, lines 2-9 of paragraph 4 and page 1, column 2, lines 10-12 of paragraph 1).

acquired image is used for determining said sag (see abstract and page 2, column 1, lines 1-11 of paragraph 3).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use determining said sag of said support element at said imaging position and aligning said acquired image for determining said sag as taught by Wollenweber in the system of Wischmann because Wollenweber provides Wischmann an improved advanced system which is useful for compensating for misalignment of two or more image data sets due to support

table deflection. The compensator 40 illustrated in FIG.2 can be used to either modify one or both sets of raw acquired data. In the alternative, the compensator 40 can modify final computerized tomography and positron emission tomography images prior to generating a unified image although such compensation may be less accurate than compensation involving raw data.

Claims 14 and 15 are similarly analyzed as claim 6 above.

Claims 16 and 17 are similarly analyzed as claim 12 above.

Regarding claim 18, Wischmann discloses a method according to claim 12 wherein said sag at one of the imaging position is assumed to be zero (column 7, lines 56-60).

Regarding claim 19, Wischmann discloses a method according to claim 12 wherein the determination of said sag of said slice at one imaging position is performed by calculation based on said sag of said supporting element determined at another imaging position (column 5, lines 33-37).

Regbarding claim 20, Wischmann is silent about specific details regarding a method according to claim 12 comprising the adjustment of said images to compensate for the difference between said sags at said two images positions. In the same field of endeavor (computed tomography), however, Wollenweber discloses imaging table sag measurement and compensation method and system comprising:

adjustment of said images to compensate for the difference between said sags at said two images positions (see page 2, column 2, lines 1-8 of paragraph 4).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use the step of determining said sag of said support element at said imaging position as taught by Wollenweber in the system of Wischmann because Wollenweber provides Wischmann an improved advanced system which is useful for compensating for misalignment of two or more image data sets due to support table deflection. The compensator 40 illustrated in FIG.2 can be used to either modify one or both sets of raw acquired data. In the alternative, the compensator 40 can modify final computerized tomography and positron emission tomography images prior to generating a unified image although such compensation may be less accurate than compensation involving raw data.

Claim 21, is similarly analyzed as claim 20 above.

Claim 22, is similarly analyzed as claim 6 above.

4. Claims 7, 11, 13, 23 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wischmann et al (U S 5,872,829) in view of Wollenweber (U S 2002/0081008) as applied to claims 1and 12 and further in view of Liu et al (U S 6,505,064 B1).

Regarding claim 7, Wischmann and Wollenweber are silent about the method, which said acquired image is an NM image.

In the same field of endeavor, however, Liu discloses diagnostic imaging system comprising acquired image is an NM image (column 4, lines 22-28).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use the step of determining said sag of said support

element at said imaging position as taught by Liu in the system of Wischmann because Liu provides Wischmann a system that improves accuracy in depicting blood vessel lumen of imaged blood vessels, it captures blood flow time variations in vivo and also compensates for the dynamics of the blood vessel.

Claims 11,13, 23 and 24 are similarly analyzed as claim 7 above.

5. Claims 27 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wollenweber (U S 2002/0081008) in view of Wischmann et al (U S 5,872,829).

Regarding claim 27, Wollenweber discloses a method for the correction of the effects of different sags of a supporting element on more than one image of one slice of a subject, comprising:

(a) the accumulation of data from a plurality of various measurements of sag in a plurality of various situations (see title and page 2, column 1, lines 1-21 of paragraph 3).

However, Wollenweber is silent about specific details regarding the step of:

(b) the utilization of said accumulated data to estimate the sag of a slice of a subject in a particular situation.

In the same field of endeavor (computed tomography), however, Wischmann discloses method for the detection and correction of image distortions in medical images comprising the step of:

(b) the utilization of said accumulated data to estimate the sag of a slice of a subject in a particular situation (see column 5, lines 33-40).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use the step of determining said sag of said support element at said imaging position as taught by Wischmann in the method of Wollenwebe because Wischmann provides Wollenwebe an improved advanced method which is used in particular in computer tomography in which the images are formed as slice images. The advantage of this method resides in the fact that it enables detection of notably distortions caused by incorrect adjustment of the patient table or by incorrect speed during the displacement of the patient table, for example during CT.

Regarding claim 28, Wollenweber discloses a method for the correction of the effects of variable sag of a supporting element of a support system on an image of a subject, comprising:

(a) measuring the sag of the support element at a plurality of positions and under a plurality of controlled loads (see title and page 2, column 2, lines 1-21 of paragraph 3);

(d) adjusting an image taken of said subject at said imaging position to compensate for the estimated sag (see page 1, column 1, lines 2-9 of paragraph 4 and page 1, column 2, lines 10-12 of paragraph 1).

However, Wollenweber is silent about specific details regarding the step of:

(b) storing these sag measurements.

(c) estimating the sag at an imaging position and under the load of a subject using said stored sag measurements.

In the same field of endeavor (computed tomography), however, Wischmann discloses method for the detection and correction of image distortions in medical images comprising the steps of:

(b) storing these sag measurements (column 5, lines 33-40).

(c) estimating the sag at an imaging position and under the load of a subject using said stored sag measurements (column 5, lines 33-40).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use storing these sag measurements and estimating the sag as taught by Wischmann in the method of Wollenwebe because Wischmann provides Wollenwebe an improved advanced method which is used in particular in computer tomography in which the images are formed as slice images. The advantage of this method resides in the fact that it enables detection of notably distortions caused by incorrect adjustment of the patient table or by incorrect speed during the displacement of the patient table, for example during CT.

Allowable Subject Matter

6. Claims 4, 5, 9 and 25 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

7. The following is an Examiner's statement of reasons for allowance.

The prior art of record fails to teach or suggest, calculation of said sag based upon the following model: a support element of length S is extended beyond its base by an extension a, the remainder of said support element, which is the supported part of the support element, is of length L; the distance of said imaged

slice from supported edge of the support element is Z; said support element is assumed to be of uniform deformation constant EJ dependent on the material and geometry of the supporting element; the load distribution of the support element with the subject is effectively approximated by an linearly equally distributed weight q along the length of said support element; in combination into other elements and features of claim 26.

Other prior art cited

8. The prior art made of record and not relied upon is considered pertinent to Applicant's disclosure.

U. S. Patent (U S 6,128,522) to Acker et al is cited for MRI-guided therapeutic unit and methods.

U.S. Patent (U S 6,341,152 B1) to Sugihara is cited for X-ray computerized tomography apparatus.

U S. Patent (U S 4,894,855) to Kresse is cited for X-ray diagnostics system having suspended position adjustable compensents.

Contact Information

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to ABOLFAZL TABATABAI whose telephone number is (703) 306-5917.

The examiner can normally be reached on Monday through Friday from 9:30 a.m. to 7:30 p.m. If attempts to reach the examiner by telephone are unsuccessful, the Examiner's supervisor, Mehta Bhavesh M, can be reached at (703) 308-5246.

Any response to this action should be mailed to:

Assistant Commissioner for Patents
Washington, D.C. 20231

Or faxed to:

(703) 872-9306 (for ***formal*** communications; please mark **"EXPEDITED PROCEDURE"**)

Hand delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA. Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application should be directed to the Group Receptionist whose telephone number is (703) 305-4750

Abolfazl Tabatabai

Patent Examiner

Group Art Unit 2625

February 6, 2005

A-Tabatabai

KANJIBHAI PATEL
PRIMARY EXAMINER